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ABSTRACT

This study investigated the relationship of the effects of library staff attitudes toward computer technology on their level of participation in a library computer literacy program. A series of in-service computer workshops at the University of Missouri-Columbia Libraries provided the opportunity to investigate computer anxiety among library personnel and other factors related to the concept of resistance to computers. To determine computer anxiety, the Computer Opinion Survey (Maurer & Simonson, 1984) was administered to 61 volunteer subjects from the staff of the university libraries. The sample was divided into two groups: those who had attended few or none of the workshops and those who had attended a number of them. To determine factors related to participation, data were collected in interviews with the two groups. Results showed that library staff members were influenced by prior hands-on experience with a computer, working with a computer in the present position, and enrollment in previous computer classes. Library-specific variables related to computer anxiety included: (1) the department; (2) number of years working in the library; and (3) the level of experience with the library's online public access catalog. Level of computer anxiety and demographic characteristics had no effect on the staff members' participation in the workshops. (Author/CGD)

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UNIVERSITY OF MISSOURI-COLUMBIA

Investigating the Effects of Human Factors on the Outcomes of a Library Computer Literacy Program

by

Rosie L. Albritton
and
MaryEllen Sievert

Final Report

CLR Faculty/Librarian Cooperative Research
Grant #5002

March 1987

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AUTHORS: Albritton, Rosie L. and Sievert, MaryEllen

TITLE: Investigating the Effects of Human Factors on the Outcome of a Library Computer Literacy Program: Final Report to CLR

DATE: March 1987

ABSTRACT:

This study investigated the effects of library staff attitudes toward computer technology on their level of participation in a library computer literacy program. Computer anxiety has been identified as one of the components of resistance to technology, but little has been done to study the characteristics associated with this concept in academic libraries. A series of in-service computer literacy workshops at the University of Missouri-Columbia Libraries provided the opportunity to study computer anxiety among library personnel and other factors related to the concept of resistance to computers.

To determine computer anxiety, the Computer Opinion Survey (Maurer and Simonson, 1984) was administered to 61 volunteer subjects from the university libraries. In addition, information on variables identified as significant in other studies was gathered in staff interviews. The sample was divided into two groups: those who attended most of the sessions, and those who attended few or none. The relationship between computer anxiety and several demographic, exogenous and background variables was tested with ANOVA. Age, gender, education, position (designated as professional or support), prior experiences at another library, and access to computers outside the library were not significantly related to computer anxiety. Library staff members, however, were influenced by previous hands-on experience with a computer ($p = .05$), working with a computer in the present position ($p = .001$), and enrollment in previous computer classes ($p = .01$). Library-specific variables related to computer anxiety included: department (designated as technical services, other departments in the main library, and branches) ($p = .02$), number of years working in the library ($p = .01$), and the level of experience with the library's online catalog ($p = .004$).

To determine factors related to participation, data were collected in interviews with the two groups. The relationship between level of participaton and computer anxiety, several human factors and organization variables was tested with Chi-square. Individual characteristics, e.g., age, gender, education, were not found to be significant. Organization and program design variables, such as department, workload, scheduling and location, however, were found to be significant. The level of computer anxiety was not found to effect participation.

This research suggests that library personnel are ready for in-service staff development in computer technology. The lack of difference in the scores on the Computer Opinion Survey between the high and low participants suggests that, whatever fears or attitudes staff have, they are willing to learn about

new technology. The importance of convenience, however, was reinforced by the results of this study. The low participation by staff in branch libraries and the responses from low participants on time and location support the view that staff respond best to that which is most convenient.

This study further suggests that the environment in which an individual works will have significant effects on interest in and ability to attend in-service training. Those planning in-service staff development and training for automation should identify and evaluate environmental variables, as well as human factors, for the purpose of developing more effective programs. Further research is needed to identify those environmental variables which could effect staff participation in similar programs.

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Rosie L. Albritton
MaryEllen Sievert

Columbia, Missouri
March, 1987

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INTRODUCTION

BACKGROUND OF PROBLEM

The University of Missouri-Columbia Libraries are committed to automating their library services. Within the Libraries' mission statement are goals that demonstrate an awareness by the UMC Libraries administration of the benefits in having automated library systems, the implications of technological change, and the impact of such change on library personnel. The libraries are currently involved in an on-going conversion project to computerize their bibliographic records for their online catalog and are planning the future development of computerized acquisitions, circulation and a serials holding subsystem. In addition, the Libraries are purchasing computer equipment to facilitate report writing, accounting, and other general office functions. Thus, the impact of automation has spread to practically all staff positions due to systems already implemented or to planning for new systems.

With this increase in the use of automation comes the need to train and retrain staff members, both on a general level to learn specific detailed procedures for a distinct subsystem, such as the online catalog and for overall system redesign. In an effort to raise the computer competence of the UMC Libraries staff, the Library Staff Development Committee and the Library Automation committee were jointly charged in early 1985 to develop a computer literacy program and to seek funding to implement it. A grant proposal was submitted to the H. W. Wilson Company, and the UMC Libraries were awarded the 1985 H. W. Wilson Staff Development Award of the American Library Association. The Computer Literacy Program was implemented in Fall 1985, and was designed as a voluntary 16-week in-service program that emphasized sequential development that staff members could tailor somewhat to their own needs (see Appendices A and B). For the purposes of the staff development program, library computer literacy was defined by Racine (1985) as:

> a theoretical understanding of computing, a feeling of comfort in using computers, a familiarity with some general and some library-specific applications on both theoretical and operational levels, and an ability to transfer this theoretical and practical knowledge to solving library problems by using computerization. (p. 15).

The evaluation methods originally proposed for the UMC Libraries Computer Literacy program provided data on the "cognitive gains" of the participants during the course of the 16-week instructional period. Cognitive gain was defined in the study as the growth of knowledge of computers and their library application. The pre- and post-tests administered to participants covered terminology presented in the program, while the questionnaires given to participants at the end of each session provided feed-back on individual presentations. Results of these evaluation procedures will be useful in improving future staff development programs.

A preliminary analysis of the attendance data and the interest surveys from the computer literacy program suggested that a follow-up study would be useful to explore staff attitudes toward computer technology and to determine the effects of library staff attitudes and perception on their level of participation in the library computer literacy program. Fine (1986) stated the following:

> The library and information profession has paid little attention to the psychological meaning of technological change for its practitioners. Library literature is replete with reports of new technologies and new applications, new promises and new problems. But there is a dearth of research concerning the psychological impact of these changes on the librarian, the intermediary who must bring the technology and the user into productive interaction. While there have been studies concerned with librarian attitudes, values and behaviors, a review of the literature of librarianship has revealed few studies concerned with the psychological factors that result from or affect the acceptance or rejection of technological innovation by the librarian. (p. 85).

A proposal was submitted to the Council on Library Resources under the Faculty/Librarian Cooperative Research program, and funding was awarded to implement the study in early 1986.

STATEMENT OF PROBLEM

The University of Missouri-Columbia Libraries were attempting to build upon the many positive aspects of library automation by providing staff development programs that demonstrated the libraries' realization that the successful design, implementation and use of library automated systems require careful attention to the human, psychological and psychosocial needs of library personnel. Luquire (1983) suggests that technological change as a force in libraries must be coped with from the attitudinal or psychological point of view even more than from the technical point. Research by Fine (1982) and Sheridan (1980) indicates that (1) human beings react strongly to change, whether the change is seen as positive or negative, and tend to resist change, even when they acknowledge that the change is good for them; and (2) that people react to the attributes of technology rather than to the technology itself.

In an historical review, of technological innovation and resistance, Fine (1986) reconfirms her earlier research with the following statement: "... The acceptance of current technology in its current state of development does not preclude that new technology will encounter new resistance." (p. 88). This was the conclusion from Sara Fine's series of research studies on resistance to technological innovation in public libraries and in library schools between 1978 and 1981. The studies further suggested that resistance is not a function of personality nor of demographics but is rather related to the climate of the organization and the beliefs, attitudes and values of the individual.

Identifying the exact nature and causes of staff reactions is essential in planning successful implementation. Negative reactions to technology may be caused by people themselves or by the work environment itself. According to Faerstein (1986), some factors that may lead to anxiety and create difficulties in using technology are: need for control or autonomy, resistance to change, need for status or power, fear of failure or the unknown, feeling of isolation and role identity. Faerstein further indicated that changes in the work environment and the organization accompany the introduction of technology. These changes can lead to concern on the part of people faced with the technology. Some representative changes that might occur are: sorting out of equipment capabilities, information overload, skill requirements, organizational and job changes, work volume, more responsibility and no reward, and physical effects.

Definition of Computer Anxiety

The concept of "computer anxiety" has been identified by some psychologists and educators as comparable to "test anxiety" and "math anxiety." These researchers imply that, like test and math anxiety, computer anxiety should be identified, measured, prevented and/or remediated in order to obtain successful education and socialization of its victims.

In terms of people's reactions, "anxiety" is an exaggerated state of fear that motivates a variety of defensive behaviors, including physical signs, conscious apprehensiveness, or disorganization. On the other hand, normal "fear" is something that is caused by external realities or factors that already exist in the environment (Faerstein, 1986).

Cambre and Cooke (1985) examined the concept of computer anxiety by conducting a review of the literature on its definition, measurement, and correlates against the framework of a selected review of the general anxiety construct and its measurement. Test anxiety and math anxiety were considered specific anxiety manifestations with potential similarities, particulary as they relate to the educational context. Five studies were identified and discussed for their contributions to an understanding of the definition, measurement practices, and correlates of computer anxiety.

1) Jordan and Straub (1982) provided an operational definition of computer fear using a five point Likert scale of the statement, "I am afraid to use computers." They conducted a discriminate analysis to identify differentiating individual characteristics between students indicating fear of using computers, those who indicated not being fearful, and those who indicated a middle position.

2) Raub (1981) defined computer anxiety as "the complex emotional reactions that are evoked in individuals who interpret computers as personally threatening." (p. 9). He further suggested that a greater proportion of A-trait people will exhibit A-state reactions when confronted with computers.

3) Rohner and Simonson (1981) described computer anxiety as "the mixture of fear, apprehension, and hope that people feel when planning to interact or when actually interacting with a computer. Because of this feeling, people who are computer anxious, when given the choice between using and not using a computer, often choose not to use." (p. 551).

4) Powers et al. (1973) defined computer anxiety as changes on four established physiological measures: systolic blood pressure, diastolic blood pressure, heart rate, and electrodermal response. Powers investigated the relationship between user anxiety and the utilization of a main-frame computer facilities, the effect of "hands-on" computer experience on anxiety levels of operators, and the effect of prior computer exposure on anxiety levels.

5) Of the studies and definitions of computer anxiety reviewed for this study, Maurer (1983) and Maurer and Simonson (1984) provided definitions that appear relevant to introducing or improving technology in libraries. Maurer (1983) defined computer anxiety as "the fear and apprehension felt by an individual when considering the implications of utilizing computer technology, or when actually using computer technology. The individual is in the state (of computer anxiety) because of the fear of interaction with the computer, even though the computer possesses no immediate or real threat." (p. 2). The construct of computer anxiety was further clarified by Maurer and Simonson

> ...[A]lthough there are rational fears related to computer utilization (e.g., job displacement, increased exposure to radiation from terminal screens) the fears that were being addressed in this study were fears that could be called "irrational" fears (e.g., impending doom or sure calamity because of contact with computers)...The following are the behaviors that were identified as being indicative of computer anxiety:
>
> 1. Avoidance of computers and the general areas where computers are located.
>
> 2. Excessive caution with computers.
>
> 3. Negative remarks about computers.
>
> 4. Attempts to cut short the necessary use of computers.
>
> (pp. 4-5).

Selected Literature Review

Several studies have reported the relationship of employees' attitudes toward computers and the successful implementation of technological innovation. Twelve studies will be cited below as relevant to this research. Only two of

these studies are in the library field and the others are from the fields of education, health science and human development.

Dakshinamurti (1985) in a study that used library staff as subjects reported that effects of technology on library personnel can be both positive and negative. Results of this survey of Canadian libraries indicated that 1) most library personnel welcome technological applications and feel positive about computer applications; and 2) the acceptance of automation was not related in direct proportion to the number of years of formal training of the staff member.

Miwa and Nakayama (1984), using librarians learning online searching as subjects, examined changes in attitude of forty inexperienced reference librarians of university libraries, who attended a three-day online searching training session. Each trainee completed pre- and post-questionnaires. As a result, overall attitudes towards computers changed from negative to positive. The researchers reported that the positive change in the trainees' attitudes reflected the successfulness of the training session. Factors that were found to be important for online training sessions were 1) uniformity of the trainees' background, 2) fitness of the training contents to the trainees' interests, and 3) proper selection of databases for the terminal session.

Griswold (1985), using teacher education majors as subjects, explored the effective component of computer literacy among college students. He investigated the effects of age, gender, locus of control (internal vs. external) and math skills on the awareness of computer applications among a sample of teacher education majors. Among 119 graduate and undergraduate education majors, gender, age and math skills all contributed to the explanation of computer awareness; but locus of control made the largest independent contribution to the explanation of the variation in awareness of computer applications, in the internal direction.

Lichtman (1979), using educators (teachers and administrators) as subjects, conducted a survey of educator attitudes toward computers. Lichtman's survey was designed as a follow-up to David Ahl's 1976 study on public attitudes toward computers. Lichtman surveyed 189 pre-service and in-service educators enrolled in summer programs at the University of South Carolina. Results showed that teachers view computers in a much more dehumanizing and isolating manner than do other segments of the population; that teachers do not feel secure in their relationships with computers; that both teachers and administrators are more wary of computers in relation to jobs and skills than are other people; that a smaller number of teachers see improvement in the quality of life through the use of computers than do others and that they see the least improvement in education of any group; and that while teachers seemed concerned about the computer's effect on job in general, few were concerned about their own jobs being taken away.

Bitter and Davis (1985) studied the attitudes of 240 teacher education students toward computers. The attitude component of the assessment instrument was designed to measure the following: computer anxiety, the perception of competence in using computers among teachers, interest in owning and learning more about computers, attitudes toward computers in education, and the attitude toward computer literacy courses. Results revealed a high positive correlation between the average attitudes toward computers and the average level of computer knowledge of the teachers surveyed. The teachers also indicated an appreciation for the value of computers in the classroom and expressed interest in expanding their computer knowledge.

Lockheed et al. (1985) analyzed some determinants of gain in computer literacy by high school students enrolled in a required introductory computer science course. She examined the relationship between student gender, the availability of computers in schools and home, student use of computers and student gains in computer literacy. Gender was found to be related to gain. Access to and experience with computers were generally unrelated to gain in computer literacy.

Loyd and Gressard (1984), also using students as subjects, examined the effects of age, gender and computer experience to the attitudes (computer anxiety, confidence, and liking) measured by the Computer Attitude Scale among 354 college and high school students. Computer experience was found to be significantly related to more positive attitudes on all three subscales. Some significant age effects also were found, but no clear trend with age was demonstrated. Gender was not found to be significantly related to computer attitudes on any of the three subscales.

Griswold (1985) examined business vs. education majors as individual subject differences or the degree to which a student's college major was related to favorable attitudes about computers. According to Griswold, as an individual encounters an object, a degree of preferability develops about that object's relationships as expressed in the belief. This evaluative response is known as an "attitude" and serves as a predisposition to respond overtly. The assumption was made that attitudes about computers are antecedents to knowledge of and effective use of computers. Thus, unwillingness to learn about computer operation may be related to negative attitudes or beliefs about computers. Based on the above assumptions, Griswold developed his study on the following hypotheses: (a) students majoring in business have a more favorable attitude about computers than students majoring in education; (b) the same attitude difference between majors prevails after individual characteristics are controlled statistically. Results supported the hypotheses: education majors had less favorable attitudes about computers than business majors, even after the relationships of certain individual differences were taken into account.

Grann (1982), using hospital personnel as subjects examined whether attitudes and expectations of hospital personnel were favorable or infavorable toward computers, prior to the introduction of an automated appointment system. This study further addressed the issue of whether the computer system to be implemented was perceived as a threat or opportunity, and if such initial

attitudes would influence later acceptance or rejection of the system. Resistance was found to be highest among professional staff, while acceptance was found to be high among personnel with less than a college degree, including appointment clerks.

Klonoff and Clark (1975), also investigated the attitudes of hospital personnel. They developed and tested an 88-item scale designed to measure staff attitudes toward and knowledge about computers. The questionnaire was administered to staff members at a psychiatric unit of hospital where a health information system was being implemented. Approximately 65 percent of the staff members had attended a two and a half day course on computer systems. Those who had completed the course had more favorable attitudes toward computerization than the remaining 35 percent who did not. Results of the study further identified knowledge and involvement as the two important variables affecting the overall success of the installation of the computer system. Direct involvement of the staff with the system also appeared to increase their general positive attitudes, while knowledge of computer systems in general directed their attention to the more realistic problems of implementation rather than to negative concerns. Klonoff and Clark cited a study conducted in 1976 in another psychiatric hospital (Reznikoff et al., 1967) that complemented their findings. This study found that attitudes were associated with certain characteristics. Specifically, favorable computer attitudes were related to gender (males viewed computers more positively than females), increased age, amount of education, nursing role (graduate nurses had more favorable attitudes than student nurses), and length of employment (employees with one to ten years of service viewed the system more favorable than did newer, older employees). This study appears to be most similar in design to the UMC/CLR study.

Johnson and Williams (1978) investigated staff acceptance and staff preparedness of an online computer system by staff members of a mental health facility. Results indicated that despite previous positive evaluation studies, clinicians' acceptance of the online system, at best, was neutral. Investigators concluded that acceptance of the system by clinicians would have been improved significantly with preparation of the organization for creative change; that technological innovation alone is not enough; and that organizational preparedness is necessary for the acceptance of change.

Jackson and Yamanaka (1985) investigated the relationships between women's ages, goals, literacy and attitudes toward computers and advanced technology. One hundred adult women 19 to over 49 years of age from four general community organizations in Canada participated in the study. Five inventories developed by one of the investigators (Jackson, 1983) were administered to the sample: Technical Goal Inventory, Technological Literacy Survey, Computer Enjoyment Questionnaire, and the Micro-computer Vocabulary Measure. Results indicated that enjoyment levels were very important in women's attitudes; high technical goals indicated high enjoyment levels. Enjoyment was also a good predictor of technical vocabulary scores. Results suggest that finding ways to increase women's curiosity, awareness and enjoyment of computers and advanced technology is needed. Attention to motivation and attitudes is important when planning educational programs for women in areas of advanced technology and in particular computers.

Fine (1986) summarized the need for further investigation of the human factors related to technology and automation with the following statement:

> While it is essential that we acquire the technical expertise to make sound technological decisions, it is equally important that we understand the evolution of principles of human behavior . . . While the technological mechanisms for making today's libraries responsive to today's societal demands are already available, the psychological defense mechanisms of the human beings who will be affected by these innovations are also already available. Human beings tend to resist change, even when change represents growth and development; human organizations tend to resist change and its turmoil, even when it represents greater efficiency and productivity. Changes in an organization affect the individuals within that organization, and individuals -- consciously or unconsciously -- in turn have the power to facilitate or thwart the implementation of an innovation. (p. 84).

Based on the research literature cited above, the assumption was made that attitudes about computers are antecedents to knowledge of and effective use of computers. That is, an unwillingness to learn about computer operations may be related to negative attitudes or beliefs about computers. As computer literacy and computer use become more important in the library environment, these attitudes may play an important role in staff success in computer-related components of work assignments, duties and responsibilities. Positive attitudes are believed to increase the prospect for achievement, and negative attitudes make achievement of competency less likely; empirical study of the relationships among these attitudes will help clarify the nature and significance of computer attitudes among library personnel.

Objectives of Study

This study was developed as a follow-up investigation of the sociological and psychological responses of the university library personnel to the computer literacy program. The study was not concerned with the cognitive gains of the participants, but rather with differences among the staff on behavioral and social perspectives (attitudes) towards (1) an in-service training program on computer technology, and (2) library automation and computers in general. The findings from this follow-up study were predicted to extend the scope of the program evaluation beyond the assessment of the staff's understanding of theoretical and practical knowledge of computer technology. The results were also predicted to be useful in planning goals and objectives for future in-service/staff development programs. It was expected that these programs would lead to a decrease in the occurrence of negative attitudes or computer anxiety, that might take the form of resistance, fear, or hostility toward fully integrated library automation system.

The purpose of this study was to document and explore the effects of library staff perceptions and attitudes toward computer technology on their level of participation in the library computer literacy program. Four hypotheses were developed:

1) Library staff who agreed to participate in the computer literacy program would have more favorable computer attitudes (lower computer anxiety) than personnel who did not participate.

2) Individual characteristics (gender, age, library position, etc.) of library staff would have a significant effect on their computer attitudes (computer anxiety).

3) Individual characteristics (gender, age, library position, etc.) of library staff also would have a significant effect on their level of participation in the computer literacy program.

4) Factors in program design (scheduling, location, topics, etc.) and organizational climate would have a significant effect on library staff participation in the computer literacy program.

METHODOLOGY

SUBJECTS

Members of the Staff Development Committee kept very careful attendance records during the Computer Literacy Program. Therefore, the CLR research team could study these records to identify three groups of people: non-participants, low participants and high participants. Those people who had served as members of the Staff Development Committee or the Library Automation Committee were eliminated from further analysis because of their involvement in planning and producing the workshops. It was assumed that these experiences may have given them a perspective on the program which would be atypical of the library staff. Also eliminated were full-time library science students working part-time in the library during their graduate program.

During the Computer Literacy Program, the library averaged a staff size of 150 people. As with most large organizations, that exact number fluctuated from 145 to 155. Thus, given these variations, it is estimated that 150 people could have attended at least half of the sessions in the Computer Literacy Program. By examining personnel records, we were able to identify library personnel who were available to attend these sessions.

Non-Participants: Non-participants were those who attended no sessions. Forty-four people were identified as having attended no sessions. Of these, four left during the course of the program. Therefore, they were eliminated

from the sample. An additional three were library science students working during their degree program. The remaining 37 people, who had been identified as non-participants, were considered as possible candidates for further study.

Low-Participants: A second group identified were those who attended three or fewer sessions, the low-participants. It was possible that the same variables which had influenced the non-participants would also influence those who attended only a few sessions. Again attendance lists were scrutinized and a list of 25 people was created. Of the original list, two left during the course of the program and one was a library science student. These people, also, were eliminated from further analysis, leaving a pool of 22 possible candidates for further study.

High-Participants: At the other end of the spectrum were those people who had attended most of the sessions. We wanted to identify those people who had attended at least 50% of the sessions. Again, using attendance records, we created a list of 37 people who had attended six or more sessions. Data on this group could be compared to the data on the other two groups. All those identified as belonging to one of these three groups were contacted and invited to be a part of the follow-up study.

VARIABLES

The review of the literature indicated several variables which were important in other studies. Preliminary analysis of data from the Computer Literacy Program revealed other variables which might have effected participation.

Factual Data: Variables from a variety of sources would allow us to analyze the different groups of subjects in several ways. The following predictor variables were gathered:

Computer Experience
- -Access to Computer Outside Work
- -Formal Computer Class
- -Hands-on Experience
- -Computer on the Job
- -Experience with LUMIN or OCLC

Age
Gender
Title (Job Classification)
Years of Schooling
Number of Years in Library
Department
Work in Other Libraries

Age, gender, computer experience and training were among those variables noted as important in other studies. Preliminary analysis had revealed that the other demographic data might have been significant. These data might reveal whether those in certain departments or job classifications were more likely than others to attend the sessions or to answer the question: Was there a difference in the demographic description of the participant and non-participant?

For the professional librarians in our sample groups, we also asked three additional questions: years since the Master's degree; attendance at other library-sponsored continuing education; attendance at other externally sponsored continuing education.

Attitudinal Variables: Computer anxiety has often been seen as a cause of reluctance to adopt new technology. Therefore, we wanted to study the computer anxiety levels of participants and non-participants to determine whether or not there was a significant difference.

Other attitudes which might have effected participation were:

1) Attitudes toward the computer literacy workshop itself, e.g., were the sessions at convenient times and places, were the topics of interest to the staff as a whole; was the individual free to attend; did she/he feel that the material would be understandable, etc.

2) The attitudes of both participants and non-participants toward the role of the computer in the library, e.g., would participants be more or less likely than the non-participants to see the computer as a vital part of the library of the future; would they see the computer as valuable either in this job or another.

PROCEDURE

The first step in the collection of the data was to gain the permission of those we were interested in studying. All those identified as belonging to any one of the three groups of possible candidates for the study were contacted by letters (see Appendices C and D). The letters explained the study and their role in it. At the end of the letter was a consent form for those who were willing to participate to sign and return (see Appendix E). Not all returned the form, so after the deadline for the return of consent forms, the research assistants telephoned all those who had not returned it to determine if they were or were not willing to participate.

Data Collection: Data were gathered in several ways. While this process of getting permission was going on, the research team received from the library administration a listing of all library staff by job classification and by department. When these lists were generated, all confidential information was suppressed, including salary.

Other data were gathered using one of the two instruments chosen for the study. All participants were required to take both pre- and post-tests, one of which was the Computer Opinion Survey by Maurer and Simonson (1984). (See Appendix F for a copy of the instrument.) This instrument, designed to measure computer anxiety, had 26 questions and offered six choices on a Likert scale

from strongly agree to strongly disagree. Further, it had been used with other groups of people whom we might compare with our sample. The same survey was administered to the non-participants to give a comparable measure. On the front page of the Computer Opinion Survey, subjects gave their age, their educational background expressed in years of schooling and whether or not they had taken a computer course.

To ascertain subjects' attitudes about the role of the computer in the library, and about the Computer Literacy Program and to gain additional information about their experiences with computers, the research team devised an interview schedule. (See Appendix G for a copy of this schedule.) Since no standard instrument already existed, one had to be created. There was insufficient time for complete testing, but before the instrument was administered to the samples, it was tested with members of the automation and staff development committees, and any troublesome questions further refined. The majority of the 36 questions were closed questions, yes/no or Likert scale responses, but there were some open questions. The investigators devised coding schemes for the open questions. Since the research assistants interviewed each person in the follow-up study, gender was obvious in the cases where the name was ambiguous.

Administration of the Instruments: With consent forms or verbal agreements received, the research assistants set up appointments with each person willing to participate. During the interview they administered the interview instrument and, if necessary, the Computer Opinion Survey. At the conclusion of each interview, they had a least five minutes to record in fuller detail the information they had noted during the interview. The interviews took place in a three-week period. Some staff who were willing to participate were unavailable during this period (because of vacations and conflicts in schedules) and, thus, were not able to participate.

DATA ANALYSIS

Not all who were invited to participate chose to do so, but some members of all three groups, low participants, non-participants and high participants did. However, so few of the non-participants responded that this group was combined with the low participants for the majority of the analyses, thus producing a research design of only two groups. Personnel records, however, could provide some demographic data on those non-participants who refused to participate in this follow-up study. All data were entered on the university's mainframe and processed using SAS (Barr, 1976). Missing data segments for individual subjects were left blank.

Since the main purpose of the research was to compare those who participated frequently with those who participated little or not at all, a series of statistical tests were run to determine if significant differences existed

between the two groups on any of the variables. Where the data met the necessary conditions (i.e., it was continuous or ratio), ANOVA's were calculated. Where the data did not meet these conditions (i.e., it was categorical), chi-square tests were calculated.

These tests were run on the following variables: gender; age; education; classification (professional vs. support); department (divided into three groups: technical services, branches, other departments in the main library); computer class taken; those questions form the interview schedule which were answered with yes/no or a similar binary choice; and for professional librarians, years since receiving the Master's degree.

ANOVA tests were run on the following variables: computer anxiety scores (from the pre-tests since not all the subjects had taken the post-tests); age; questions from the interview schedule which required a choice on a Likert scale; and for professional librarians, years since the Master's degree and participation in continuing education activities.

RESULTS

COMPUTER ANXIETY AMONG LIBRARY STAFF

Several variables which previous research had shown to have influenced other groups, also influenced computer anxiety scores among librarians. Other variables, which were unique to libraries, also were shown to have an influence. ANOVA tests were calculated with the score on the Computer Opinion Survey to test the relationship(s) with the following variables: gender; age; education; library position; computer experience; number of years in the library; experience with LUMIN (University of Missouri Libraries Online Catalog) and OCLC; work in other libraries; access to a computer; and, for professional librarians, years since receiving the MLS and participation in continuing education. (See Table 1.0 for computer anxiety mean scores for each variable tested, and Table 1.1 for ANOVA values.)

Gender had no significant effect on computer anxiety. The sample consisted of 18 males and 43 females. The mean score for the males in the sample was 60.55 and the mean score for the females was 59.

Age, also, had no significant effect on computer anxiety. The age of members of the sample ranged from 20 to 67. For calculation, age was divided into three categories, 20-29, 30-39, 40 and over. The youngest group, those under 30, had a mean score of 55 on the Computer Opinion Survey; those over 30 had a mean score of 55.19; and those over 40 had a mean score of 64. While there was an increase in anxiety with age, it was not significant.

TABLE 1.0 COMPUTER ANXIETY MEAN SCORES AND SIGNIFICANT DIFFERENCES ACCORDING TO VARIOUS DEMOGRAPHIC AND BACKGROUND VARIABLES

VARIABLES	MEAN	STANDARD DEVIATION	NUMBER
Gender			
Male	60.55	21.26	18
Female	59.00	21.27	43
Age			
20-29	55.00	12.00	13
30-39	55.19	20.75	21
40 and over	64.00	24.71	25
Education			
High school only	71.00	20.10	7
Bachelor's degree	56.67	23.58	21
Graduate study	55.93	18.90	29
Position			
Professional	56.37	15.82	20
Support	60.40	23.37	41
Access to Computer Outside of Work			
Yes	55.88	20.59	24
No	61.78	21.38	37
Worked in Other Libraries			
Yes	58.02	19.45	35
No	61.38	23.40	26
Department			
Branches	51.00[a]	12.16	12
Technical services	55.00[a]	20.60	28
Other departments	68.00[b]	25.96	23

TABLE 1.0 - Continued

VARIABLES	MEAN	STANDARD DEVIATION	NUMBER
Number of Years Worked at Library			
0-4 years	54.45[a]	18.25	22
5-9 years	51.50[a]	17.04	16
10 or more years	69.78[b]	22.73	23
Completed Formal Computer Course			
Yes	51.58[a]	13.98	26
No	64.47[b]	22.34	32
Early Experience With OCLC			
Yes	65.65	21.96	23
No	55.71	19.93	38
Experience with LUMIN[1]			
Occasional	65.00[a]	23.98	12
Frequent	55.00[a]	18.16	46
None	99.00[b]	22.50	3
Quality of LUMIN Experience			
Pleased	63.14	17.33	44
Not Pleased	56.02	20.34	14
No Answer	92.67	22.50	3
Hands-on Experience			
Yes	58.05[a]	21.11	57
No	79.05[b]	4.12	4
Computer on the Job			
Yes	54.96[a]	17.33	52
No	85.44[b]	23.09	9

[1] University of Missouri Libraries Online Catalog

[a,b] Means labeled with different letters are significantly different.

TABLE 1.1 ANALYSIS OF VARIANCE OF VARIABLES TESTED FOR A RELATIONSHIP WITH COMPUTER ANXIETY

Source	DF	MS	F	P
Gender	1	30.700	0.07	.7054
Age	2	568.470	1.27	.2870
Level of education	2	752.097	1.73	.1880
Level of position	1	120.607	0.27	.6070
Work in the libraries	1	168.022	0.37	.5430
Access to a computer	1	508.252	1.14	.2890
Introduction of OCLC	1	1416.114	3.30	.0740
Department	2	1550.203	3.81*	.0280
Computer class	1	2384.099	6.56*	.0130
Experience with LUMIN	2	2267.701	5.96**	.0040
Years in library	2	2007.899	5.13**	.0090
Hands-on experience	1	1719.305	4.06*	.0490
Computer on the job	1	7129.002	21.46***	.0001

*p<.05
**p<.01
***p<.001

Level of education was a third variable which was shown not to effect computer anxiety. Seven in the sample had only a high school education. Twenty-one had received bachelor's degrees and 29 had some graduate education. The mean score on the Computer Opinion Survey was 71 for those with a high school education, 56.67 for those with a college degree and 55.93 for those with graduate education. While these figures revealed a decrease in the mean anxiety score for those with higher education, the ANOVA did not reveal a significant difference.

Whether or not those in the sample were members of the professional or support staff also had no significant effect. Forty-two members of the sample were employed in positions categorized by the library as support and 19 in positions categorized as professional. The mean score of the Computer Opinion Survey for the support staff was 60.40 and the mean score for the professional staff was 56.37.

Access to a computer other than at work also was not significant. Twenty-four members of the sample, however, had access to a computer other than at work while 37 did not. The mean score for those with other access was 55.88 and the mean score for those who did not was 61.78.

Previous experience could also have an effect, so the subjects were asked if they had been at the library when OCLC was introduced and if the experience

had been positive. Thirty-eight members of the sample had joined the library staff since the introduction of OCLC. Whether they had been at the library or had a pleasant experience made no significant difference in their scores on the Computer Opinion Survey.

Whether or not the subjects had worked at another library made no difference in their anxiety scores. Twenty-six of the sample had not worked in another library, but 35 had. The mean score for those who had not worked elsewhere was 61.38 and the mean score for those who had was 58.02.

None of the questions on the Interview Schedule which queried the subjects about their feelings about either the Computer Literacy Program itself or the role of the computer in the library had a significant effect. Similarly, none of the questions that were designated for the professional librarians revealed a significant effect.

There was a significant difference in department. Department, divided into three categories (branches, technical services and other departments in the main library) was significantly different at the .02 level. The mean score those who worked in the branches was 51; the mean of those who worked in technical services was 55; but the mean for those who worked in the other departments of the main library was 68.

So, too, the number of years people had worked for the library made a significant difference. This variable was divided into three levels: 0-4 years; 5-9 years; 10 or more years. Those who worked at the library four years or less had a mean score of 55.45 on the Computer Opinion Survey; those who worked 5-9 years had a mean score of 51.5, but those who worked more than 10 years had a mean score of 69.78. This difference was significant at the .01 level.

Those who had taken a formal computer class were significantly less anxious than those who had not ($p = .01$). Twenty-six members of the sample had taken a computer class and had a mean score of 51.58 as compared to the mean score of 64.47 for the 32 who had not taken such a class.

Hands-on experience with a computer was significant at the .05 level. Only four members of the sample, however, had no hands-on experience with a computer. The mean score for the 57 with such experience was 58.05 as compared to a mean score of of 79.50 for those who had no experience with computers. While the ANOVA revealed a significant difference, the small number of those who had not had experience with computers probably skewed the test somewhat.

The experience of working with a computer at the current job was significant at the .0001 level. Again, the figures were lopsided. Fifty-two members of the sample were already working with computers at their job. Their mean score was 54.96, as compared to 85.44 for the nine who were not working with computers in their jobs.

Experience with LUMIN, the online public access catalog of the University of Missouri libraries, was measured in three levels: occasional experience, frequent experience, and no experience. Those who used it frequently had a mean score of 55; those who used it occasionally had a mean score of 66; but those who had never used had a mean score of 99. However, only three members of our sample had never used this system. The ANOVA revealed a significant difference at the .004 level. In response to a question about the quality of that experience, those who had been pleased had a mean score of 56 while those who had not been pleased had a mean score of 63. Since the test included those who had never used the system, the statistical result was significant at the .008 level. The small number who had not used the online catalog, however, may have skewed the results.

COMPUTER ATTITUDES AND PARTICIPATION

Computer attitudes were measured by the Computer Opinion Survey. The scores for the high and low participants were compared to ascertain any significant differences.

There was no significant difference between the two groups on the Computer Opinion Survey ($p = .10$). The mean score for the low participants was 64, with a standard deviation of 21. The mean score for the high participant was 55, also with a standard deviation of 21. Scores for the high participants ranged from 26 to 115 and scores for the low participants from 34 to 118.

INDIVIDUAL CHARACTERISTICS OF HIGH AND LOW PARTICIPANTS

Several individual variables were studied to determine if the profile of those who attended the sessions frequently was different from those who attended little or not at all. (See Tables 1.2 and 1.3 for characteristics and distribution of groups on variables.)

Though fewer males than expected were in the high participation group, there was not a significant difference in gender between the high and low participants ($p = .09$).

So, too, level of education did not differentiate the two groups. Education was analyzed in 3 levels: high school, college degree, and graduate work. There were more of the high participants with undergraduate and graduate degrees, but the difference was not significant.

Age did not differ significantly between the groups. To measure age, the sample was divided into three groups: ages 20-29, ages 30-39, and over 40.

TABLE 1.2 CHARACTERISTICS OF TWO GROUPS
(MEANS AND STANDARD DEVIATIONS)

VARIABLES	N = 33 HIGH PARTICIPATION GROUP			N = 30 LOW PARTICIPATION GROUP		
	Mean	S.D.	Range	Mean	S.D.	Range
Computer anxiety	55.00	20.61	26-115	64.00	20.99	34-118
Age	39.70	10.04	22- 67	37.60	13.31	20- 63
Years at library	8.20	5.81	1- 21	9.80	9.80	1- 31

TABLE 1.3 DISTRIBUTION OF GROUPS ON VARIOUS VARIABLES

VARIABLES	HIGH PARTICIPANT		LOW PARTICIPANT	
	Number	Percent	Number	Percent
Gender				
Male	6	18	12	40
Female	27	82	18	60
Age				
20-29	5	15	9	32
30-39	12	36	9	32
40 and over	16	49	10	35
Job Classification				
Professional	11	67	9	70
Support	22	33	21	30
Education				
High school	2	7	5	18
Bachelor's	12	40	10	36
Graduate	16	53	13	46
Years in Library				
0-4	10	30	3	43
5-9	12	37	9	17
10 or more	11	33	12	40
Worked at Other Libraries				
Yes	19	58	17	57
No	14	42	13	43
Hands-on Computer Experience				
Yes	32	97	27	90
No	1	3	3	10
Computer on the Job				
Yes	31	94	23	77
No	2	6	7	23

TABLE 1.3 continued

VARIABLES	HIGH PARTICIPANT Number	HIGH PARTICIPANT Percent	LOW PARTICIPANT Number	LOW PARTICIPANT Percent
Completed Formal Computer Course				
Yes	14	44	12	43
No	18	56	16	57
Access to Computer Outside Work				
Yes	15	45	9	30
No	18	55	21	70
Searched on LUMIN[1]				
No	0	0	3	10
Frequently	28	85	19	63
Occasionally	5	15	8	27

[1] University of Missouri's online catalog.

The mean age of the high participants was 40 and the mean for the low participants was 38. The high participants ranged in age from 22 to 67 and low participants from 20 to 63.

Job classification, i.e. professional or support staff, also did not differentiate the two groups. The high participation group was composed of 22 support staff and 11 professional staff. The low participant group was composed of 21 support staff and nine professional.

Whether or not the participants had taken a computer class did not distinguish the two groups. Eighteen of the high participants and 16 of the low participants had not taken a class.

The number of years a staff member worked in the library did not influence participation. The number of years was divided into three groups: those who had worked four years or less, those who had worked between five and nine years, and those who had worked 10 years or more. The high participants had worked an average of 8.2 years and the low participants 9.8. The high participants had worked between one and 21 years and the low participants between one and 31 years.

Whether or not the staff member had worked in other libraries also had no significant effect on participation. Nineteen of the high participants and 17 of the low participants had worked in another library.

Hands-on experience was another variable which did not predict participation. However, only one person among the high participants and three among the low participants answered that they never had such experience.

Similarly, whether or not a staff member was currently working with a computer was not significant ($p = .07$). Again, computer technology was common, as only two of the high participants and seven of the low participants were not working with computers. It is possible, given the (p) value that a group where more of the sample was not already working with computers would produce a significant difference for this variable.

Whether or not the staff member owned or had access to a computer outside of the job also did not have a significant effect. Nine of the low participants and 15 of the high participants had such access.

Experience with LUMIN, the online public access catalog of the University of Missouri libraries, also did not have significant effect. Again, however, very few of the sample, all low participants, had not searched on LUMIN.

Previous computer experience with library automation, specifically the introduction of OCLC, did not have significant effect. Thirty-nine of the sample (65%), however, had not worked at the library when OCLC had been introduced.

For the 20 professional librarians in the sample, three other variables were tested to determine a significant difference. First, the number of years

For the 20 professional librarians in the sample, three other variables were tested to determine a significant difference. First, the number of years since the degree was compared. The mean for the high participants was 13 years with a range of six to 29 years since the degree. The statistical test, however, revealed no significant difference.

The second and third variables studied both concerned continuing education. Professional librarians were asked if they had attended both in-service education offered by the library and if they had attended continuing education offered by other organizations. There was no significant difference in attendance at other in-service offerings, but there was a significant difference in attendance at external continuing education ($p = .02$). All of the high participants had attended continuing education elsewhere while four of the low participants had never attended such education.

EXTERNAL FACTORS AND PARTICIPATION

If neither attitudes nor many of the demographic characteristics differentiated the low from the high participants, other factors must have influenced the decision to attend. Several questions on the Interview Schedule obtained information about environmental and organizational factors that might have been influential.

When asked if the scheduling of the workshops was convenient, the low participants were much more likely than the high participants to answer no ($p = .005$). Only two of the high participants were unhappy with the schedule, but 19 (65%) of the low participants did not find the schedule convenient. (See Tables 2.0 and 2.1).

Location of the workshops (generally the same) also differentiated the two groups ($p = .01$). When asked if the location was convenient, nine (31%) of the low participation group, as compared to two (6%) of the high participation group said no. (See Tables 3.0 and 3.1.)

When asked for suggestions about changes in scheduling or location, 23 of the high participants (70%) as opposed to six (20%) of the low participants said there was no need for changes. Forty-six percent of the total sample felt there was no need for changes in scheduling or location.

TABLE 2.0 CHI-SQUARE ANALYSIS OF SCHEDULE CONVENIENCE

[Participant Groups x Schedule Convenience] Observed and Expected Distributions of Groups, with Frequencies of Subjects According to Schedule Convenience

	High Participants Number	Percent	Low Participants Number	Percent	
Schedule Convenient	[22] 31	76	[19] 10	24	41 [66%]
Schedule Not Convenient	[11] 2	10	[10] 19	90	21 [34%]
	33		29		62
	[53%]		[47%]		[100%]

[Expected Cell Number]

Chi-square = 24.361, df = 1 [critical value is 7.88 at .005 level]

TABLE 2.1 COMPARISON OF PROGRAM SCHEDULE WITH PROGRAM PARTICIPATION

[Schedule Convenience x Participant Groups] Observed Distributions and Frequencies of Schedule Variable According to Participant Group Level

	Schedule Convenient	Schedule Not Convenient	
High Participants	31 [94%]	2 [6%]	33 [53%]
Low Participants	10 [34%]	19 [66%]	29 [47%]
	41	21	62
	[66%]	[34%]	[100%]

TABLE 3.0 CHI-SQUARE ANALYSIS OF LOCATION CONVENIENCE

[Participant Groups x Location Convenience] Observed and Expected Distribution of Groups, with Frequencies of Subjects According to Location Convenience

	High Participants Number	Percent	Low Participants Number	Percent	
Location Convenient	[27] 31	61	[24] 20	39	51 [62%]
Location Not Convenient	[6] 2	18	[5] 9	82	11 [18%]
	33		29		62
	[53%]		[47%]		[100%]

[Expected Cell Number]

Chi-square = 6.596, df = 1 [critical value is 3.84 at .005 level]

TABLE 3.1 COMPARISON OF LOCATION OF WORKSHOPS WITH PROGRAM PARTICIPATION

[Location Convenience x Participant Groups] Observed Distributions and Frequencies of Location Variable According to Participant Level

	Location Convenient	Location Not Convenient	
High Participants	31 [94%]	2 [6%]	33 [53%]
Low Participants	20 [69%]	9 [31%]	29 [47%]
	51	11	62
	[82%]	[18%]	[100%]

While there was no significant difference between the two groups in response to the question of whether or not there had been sessions missed which they had desired to attend, the reasons for not attending workshops of interest differed between the two groups ($p = .03$). High participants were much more likely to say that they could not attend because of a conflict in schedule. Those in the low participation group were much more likely to have been absent (23%) or to have too much work (34%). (See Tables 4.0 and 4.1) Interestingly, while two of the high participants said they did not attend a specific workshop of interest because it was not job-related, none of the low participants gave that response.

Those who were low participants felt they could not attend the session and still complete their work. Fifteen of the low participants responded yes to the question, "Did you feel you could attend the sessions of the computer literacy workshop and still complete your work?" while 15 responded no. On the other hand, only four of the high participants said no while 29 said yes. (See Table 4.0 and 4.0.)

However, again library department (divided into technical services, branches, and other departments in the main library) made a statistical difference ($p = .005$). Those in branches were much less likely to attend the sessions. In fact, no one from any of the branches was among the high participants and 12 (40%) were in the low participation group. conversely, staff from technical services were very likely to attend. Only seven of the low participants were from technical services while that department accounted for 21 (63%) of the high participants. Other departments in the main library accounted for 36 percent of both the high and low participation groups. (See Tables 5.0 and 5.1.)

Also, as would be expected from the results above, high participants came from departments where many people attended the session and low participants came from departments where they did not. When asked if many others from their department attended the session, 28 (85%) of the high participants said yes while only five (15%) said no. Conversely, 20 (67%) of the low participants said no while 10 (33%) said yes. The results of this question were significantly different ($p = .005$). (See Tables 6.0 and 6.1).

Further, the answers which the subjects gave to the open questions support the hypothesis that these environmental, organizational factors were by far the most important part of the decision to attend or not attend the sessions of the program. (See Table 7.0 for variables tested with chi-square.)

TABLE 4.0 CHI-SQUARE ANALYSIS OF REPORTED WORKLOAD

[Participant Groups x Workload] Observed and Expected Distributions of Groups, with Frequencies of Subjects According to Effect of Workload

	High Participants Number	Percent	Low Participants Number	Percent	
Workload Effected Attendance	[10] 4	21	[9] 15	79	19 [30%]
Workload Did Not Affect Attendance	[23] 29	66	[21] 15	34	44 [70%]
	33		30		63
	[52%]		[48%]		[100%]

[Expected Cell Number]

Chi-square = 10.704, df = 1 [critical value is 7.88 at .005 level]

TABLE 4.1 COMPARISON OF REPORTED WORKLOAD WITH PROGRAM PARTICIPATION

[Workload x Participant Group] Observed Distributions and Frequencies of Workload Variable According to Participant Group Level

	Workload Effected Attendance	Workload Did Not Effect Attendance	
High Participants	4 [12%]	29 [88%]	33 [52%]
Low Participants	15 [50%]	15 [70%]	30 [48%]
	19	44	63
	[30%]	[70%]	[100%]

TABLE 5.0 CHI-SQUARE ANALYSIS OF DEPARTMENTAL REPRESENTATION

[Participant Groups x Departments] Observed and Expected Distributions of Groups, with Frequencies of Subjects According to Library Department

	High Participants Number	Percent	Low Participants Number	Percent	
Tech services	[15] 21	75	[13] 7	25	28 [44%]
Other departments	[12] 12	52	[11] 11	48	23 [37%]
Branches	[6] 0	0	[6] 12	100	12 [19%]
	33		30		63
	[52%]		[48%]		[100%]

[Expected Cell Number]

Chi-square = 18.944, df = 2 [critical value is 10.60 at .005 level]

TABLE 5.1 COMPARISON OF LIBRARY DEPARTMENT WITH PROGRAM PARTICIPATION

[Departments x Participant Groups] Observed Distributions and Frequencies of Department Variable According to Participant Group Level

	Tech Services	Other Departments	Branches	
High Participants	21 [64%]	12 [36%]	0 [0%]	33 [52%]
Low Participants	7 [23%]	11 [37%]	12 [40%]	30 [48%]
	28	23	12	63
	[44%]	[37%]	[19%]	[100%]

TABLE 6.0 CHI-SQUARE ANALYSIS OF REPORTED CO-WORKER ATTENDANCE

[Participant Groups x Co-Worker Attendance] Observed and Expected Distributions of Groups, with Frequencies of Subjects According to Co-Worker Attendance

	High Participants Number	Percent	Low Participants Number	Percent	
Co-Worker Attendance High	[20] 28	74	[18] 10	26	38 [60%]
Co-Worker Attendance Low	[13] 5	20	[12] 20	80	25 [40%]
	33		30		63
	[52%]		[48%]		[100%]

[Expected Cell Number]

Chi-square = 17.423, df = 1 [critical value is 7.88 at .005 level]

TABLE 6.1 COMPARISON OF REPORTED CO-WORKER ATTENDANCE WITH PROGRAM PARTICIPATION

[Co-Worker Attendance x Participant Groups] Observed Distributions and Frequencies of Co-Worker Attendance Variable According to Participant Group Level

	Co-Worker Attendance High	Co-Worker Attendance Low	
High Participants	28 [85%]	5 [15%]	33 [52%]
Low Participants	10 [33%]	20 [67%]	30 [48%]
	38	25	
	[60%]	[40%]	[100%]

TABLE 7.0 CHI-SQUARE VALUES CALCULATED FROM RESPONSES TO INTERVIEW SCHEDULE BY HIGH AND LOW PARTICIPANT GROUPS

CATEGORY	DF	CHI-SQUARE	P
Gender	1	3.665	.056
Education	2	1.711	.425
Age	2	2.563	
Position title	1	0.081	
Department	2	18.944***	.000
Previous computer class	1	0.005	
Program schedule	1	0.005	
Changes in workshop schedule/ location	4	29.776**	
Selection of workshop	4	22.748**	
Co-worker attendance	1	17.423**	
Workload	1	10.704**	
Design of future workshops	4	6.992	
Role of computer technology in library	4	6.992	
Pleased with LUMIN searches	2	4.544	
Personally searched on LUMIN	2	5.285	
Own or have access to computer outside job	1	1.592	

*p < .05
**p < .01
***p < .001

DISCUSSION

COMPUTER ANXIETY IN THE TWO GROUPS

The first hypothesis, that library staff who participated frequently in the computer literacy program would have more favorable computer attitudes than personnel who did not participate or participated only occasionally was rejected. There was no significant difference between the two groups on the Computer Opinion Survey or on the questions from the Interview Schedule which elicited opinions about the computer and the library.

There are at least three possible explanations why there was no difference between the two groups in computer anxiety. First, several of those who did not participate in the original series of workshops were unwilling to be interviewed during the follow-up study. Thus, the two groups that were compared may have not contained those individuals who would have exhibited the highest computer anxiety. This anxiety, in fact, could have been one reason they were unwilling to participate in the follow-up study.

A second possible reason why there was not a significant difference in the computer anxiety of the two groups may be that even those who were very anxious were aware of the role of the computer in the library and, thus, in spite of their fears, attended the sessions of the Computer Literacy Program (CLP). The slight difference in the highest scores and the closeness of the range of scores for the two groups both suggest that this phenomenon may be occurring. Dakshinamutri's (1985) research in which he concluded that library personnel welcome technological applications supports this explanation. This theory, however, is contradictory to Fine (1982) who stated that library staff reacted to change whether the change was seen as negative or positive.

The third possible explanation is somewhat similar to the second. The University of Missouri libraries have a long history of automation. It is possible that some individuals in the sample might under different circumstances have exhibited high computer anxiety, but in this library they have already had experiences with computers which have reduced this anxiety. The small number of individuals who did not have computer experience supports this possibility.

INDIVIDUAL CHARACTERISTICS AND COMPUTER ANXIETY

The second hypothesis, that individual characteristics of the library staff would have a significant effect on their computer attitudes was partially supported with six (46%) of the 13 predictor variables showing significant effects on computer attitudes. The significant variables were department, number of years worked in the library, experience with the online public access catalog, attendance at a computer class, hands-on experience with computers, and working with a computer on the job. Gender, education, age, work in other libraries, access to a computer other than at the job, experiences during the introduction of OCLC, and job classification did not show significant effects.

The results from some of the variables were what would be expected from a reading of the literature. In many studies, knowledge of computers was shown to decrease computer anxiety. Thus, experience with the online public access catalog, attendance at a computer class, hands-on experience with a computer and working with a computer at the job should have differentiated the two groups and did. The small number of people in the sample who did not have computer experience may, in fact, be part of the reason why some of the other variables were not significant.

The number of years worked in library was also statistically significant. One possible explanation is that the longer a person has worked in a particular library, especially in such a large library, the easier it is to adapt one's job so that one does not have to work with a computer if one is intimidated by computers. Though no tests were made, it is entirely possible that those not working with a computer or not aware of the computer applications currently in the library were those who had worked the longest at the library. The lack of a significant difference in age makes it clear, however, that length of service and age are not necessarily the same.

Probably of greatest interest is the significant difference found among library departments. Those in technical services were significantly less anxious than those who worked in other departments in the main library and more anxious than those in the branches. Since the technical services department was one of the first places where library automation was initiated, it is probable that those working there have already overcome any computer anxiety. Conversely, it is also possible that those in that department chose their jobs because of the opportunity to work with computers or that other avoided that department because the jobs required the use of computers.

INDIVIDUAL CHARACTERISTICS AND PARTICIPATION

The third hypothesis, that individual characteristics of the library staff would have a significant effect on their level of participation in the computer literacy program, was not really supported, with only one predictor variable showing a significant effect and that one was limited to the professional librarians. That variable was participation in continuing education offered by other organizations. Again, however, the numbers not participating were small. All other variables were shown not to effect participation.

While it is somewhat surprising, and contradictory to results of similar studies in other fields, these results fit with the other findings in this study. That is, the individual variables, such as age, gender and education did not have an effect on computer attitudes and computer attitudes did not have an effect on participation. The same explanation which was offered in the earlier cases may be operative in this instance also. That is, whatever their individual backgrounds and their personal views of computers, library staff members were aware that the computer is important to the operation of a library and, therefore, were willing to learn more about it.

ORGANIZATIONAL CLIMATE, PROGRAM DESIGN AND PARTICIPATION

The fourth hypothesis, that factors in program design and organizational climate would have a significant effect on participation, was supported. Low participants reported with greater frequency than high participants that environmental and organizational factors and program design helped to determine their decision to attend. Scheduling, location, the department worked in, the number of people in the department attending a session, confidence in being able to attend the sessions and complete assigned work, and the reasons given for not attending sessions of interest all showed a significant effect.

The low participants were much more likely than the high participants to say the scheduling and location of the CLP sessions were not convenient. As with all self-reports, these data may be interpreted as true or they may be seen as hiding real reasons. It is entirely possible that other variables, not tested, were very important in the decision to attend or not. Since, however, the scores on the Computer Opinion Survey and the questions on the Interview Schedule did not emerge as significantly different, it seems feasible to accept the truth of the respondents' answers. The question then arises: What about the scheduling and location were so inconvenient?

Most sessions of the CLP were held in the same location and in the same time slot. Those planning the workshops did survey the staff to determine a time which would be convenient for many. Why this time was not convenient of so many of the low participants, therefore, is not clear.

Most sessions were held in the campus union building, a block from the main library. The other sessions were held in the main library. For those in the branches, these locations would not have been particulary convenient, but no one was more than a mile from the sessions. Attendance would have meant a walk of several blocks, not always in pleasant weather, since parking in the center of campus is virtually nonexistent. It is even possible that the prospect of walking across campus to attend the program was so unpleasant that the time, which was actually feasible, was made to seem inconvenient.
Scheduling some sessions in the larger branches or at other sites around campus might have increased attendance for some individuals.

The difference in departments might be the result of any of several situations. First, and most simply, some departments were larger and might have had more flexibility in releasing staff to attend the CLP. With the exception of the health sciences library, the branches were staffed by one or two full-time personnel. Therefore, it may have been difficult for those one or two to find time in the schedule for participation in the CLP. Technical services, on the other hand, could close the entire department or leave only one or two of the large staff to handle the necessary problems while the greater part of the staff were attending the CLP. Other departments in the main library work with the public and, therefore, did not have the option of closing the department. However, they did have larger staffs and could rotate who attended while still leaving a skeleton staff working when necessary.

The other environmental variables which were significant, however, suggest that it was not merely the number in the department and the ease with which staff could be released. Low participants were much more likely than high participants to say that if they attended the sessions, they could not complete their work. It is possible that low participants were cloaking personal feelings about computers in this argument. It is equally possible that the environment in some departments was such that staff truly did not feel free to attend. Further investigation might reveal differences in the environments of the departments which would explain why this phenomenon occurred.

The fact that high participants came from departments where many of the staff attended the same sessions might have reflected either example of crowd psychology or a supportive environment. Again, further research might provide the explanation.

CONCLUSIONS

The most obvious conclusion from this research is something which was not tested for, but which appeared in several forms -- the degree to which the staff of this library was already familiar with and using computers. All other conclusions must be read in light of this fact. This library has had a long history of automation, and the current administration lists continued use of technology as one of the goals of the library. The staff seemed to be well aware of this goal, at least as it affects them in their daily activities.

Several factors were found to influence computer anxiety in library staff, but these differed from the results of studies in other fields. The primary determinants of computer anxiety were those things which might be classified as experiences with a computer. Even the department worked in might be so classed if it is true that technical services is the most automated department in a library. On the other hand, the high anxiety discovered among those who had worked longest at the library suggests that library administrators should be careful about planning tasks involving computer with long-term employees. Because of the high degree of computer awareness and experience mentioned above, further research, with a different sample, on the variables not found to be significant in this study could be valuable.

This research suggests that library personnel are ready for in-service staff development in the area of computer literacy. The lack of difference in the scores on the Computer Opinion Survey between the high and low participants suggests that, whatever fears or knowledge staff members may have, they are willing to learn about new technology. The lack of difference in the individual characteristics between the high and low participants further supports this belief.

The importance of convenience was reinforced by the results of this study. The unsually low participation by staff in the branch libraries and the

negative responses from low participants about the time and location of the programs both support the view that staff responds best to that which is most convenient. Those planning in-service staff development should be aware of this research, since this conclusion is probably not colored by the high degree of computer literacy among the sample.

This research further suggests that the environment in which a person works will have significant effects on his/her interest in and ability to attend such in-service training.[2] Further research is needed, however, to identify those environmental variables which could effect attendance at similar programs.

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APPENDICES

APPENDIX A

UNIVERSITY OF MISSOURI-COLUMBIA LIBRARIES

MEMORANDUM

To: UMC Library Staff
From: Staff Development Committee
Date: August 15, 1985
Subject: Computer Literacy Program

Attached is a preliminary schedule of the sessions to be offered in the Computer Literacy Program for library staff funded by the H. W. Wilson grant. The program will run from September 6, 1985 to January 17, 1986, and deals with sixteen topics ranging from a conceptual lecture by Michael Gorman from the University of Illinois on the role of staff in library automation to hands-on practice in word processing.

Please review this schedule and make some preliminary decisions about which classes you would like to attend. Dr. Shaughnessy is encouraging all supervisors to give release time for library staff to allow them to take advantage of this training opportunity. Everyone is welcome at the initial lecture by Michael Gorman. The only requirement for attendance at any of the other classes is that you fill out the program evaluation survey offered in session #2, and the follow-up survey on the final day of the series.

The classes are designed to be one hour in length for the most part. Lectures offered at more than one time on the same or adjacent days are identical in content; plan to attend only one. The microcomputer sessions are in two parts: one-hour introductory lectures, and follow-up hands-on practice sessions which will last about four hours. Attendance at an introductory lecture is a prerequisite for the hands-on sessions but does not obligate you to attend them. If you have questions about any of the classes, please contact a member of the Staff Development Committee: Marsha Stevenson, Pat Burbridge, June DeWeese, Viki Young, and Melissa Megas; or the chair of the Automation Committee, Drew Racine.

Please return the attached sheet indicating the programs in which you are interested to Marsha Stevenson, 102 Ellis, BY AUGUST 28. This does not commit you to attendance, nor does it limit you to these sessions only; it is just for our information in making room reservations.

Thank you.

COMPUTER LITERACY PROGRAM
PRELIMINARY SCHEDULE

Session	Plan to Attend?
1. "The Human Dimension of Library Automation" Michael Gorman, University of Illinois Friday, Sept. 6, 10:30 and 1:30	Yes _____ No _____
2. Program Evaluation Survey; Introduction to Computers Brian Waterman, Campus Computing Thursday, Sept. 12, 1:30; Friday, Sept. 13, 10:30; and Friday, Sept. 13, 1:30 (Final session will be the survey only) SURVEY IS REQUIRED FOR ATTENDANCE AT FURTHER SESSIONS	Yes _____ No _____
3. Introduction to Library Automation Tom Kochtanek, Univ. of Mo. SLIS Thursday, Sept. 19, 1:30	Yes _____ No _____
4. Introduction to OCLC Mary Ann Mercante, MLNC Friday, Sept. 27, 10:30	Yes _____ No _____
5. Applications of OCLC Vic Myers, Marilyn Voegele, LITQUEST Coordinator Friday, October 11, 10:30	Yes _____ No _____
6. LUMIN. Nancy Boon, Library Systems Office Friday, October 25, 10:30	Yes _____ No _____
7. RLIN. RLIN Search-Only Trainer from CLASS Thursday, November 1, 8:30	Yes _____ No _____
8. Database Searching. LITQUEST Coordinator Friday, November 8, 10:30	Yes _____ No _____
9. Circulation; Bar Coding. Marsha Stevenson, Helen Spalding (UMKC) Friday, November 15, 10:30	Yes _____ No _____
10. Acquistions. Carol Vaughan. Friday, November 22, 10:30	Yes _____ No _____

11. Serials.
Deana Astle, Jim Cubit (Rolla)
Friday, December 6, 10:30 Yes _____ No _____

12. Introduction to the IBM PC.
Rick Mihalevich, Campus Computing
REQUIRED FOR ATTENDANCE AT SESSIONS 13-15
IF YOU HAVE NO PREVIOUS PC EXPERIENCE
Thursday, December 12, 1:30;
Friday, December 13, 10:30 and 1:30 Yes _____ No _____

13. Data Base Management Systems.
Rick Mihalevich, Campus Computing
Friday, December 20, 10:30 (REQUIRED FOR
ATTENDANCE AT HANDS-ON SESSION) Yes _____ No _____
Hands-on Sessions: 8:00 a.m. - 12:00 noon,
Monday Dec. 23 and Monday Dec. 30 Yes _____ No _____

14. Spreadsheets.
Rick Mihalevich, Campus Computing.
Monday, January 6, 10:30 and 1:30 (REQUIRED
FOR ATTENDANCE AT HANDS-ON SESSION) Yes _____ No _____
Hands-on sessions: 8:00 a.m. - 12:00 noon,
Tuesday Jan. 7, Wed. Jan. 8, Thurs. Jan. 9 Yes _____ No _____

15. Word Processing.
Glenda Moum, Campus Computing
Thursday, Jan. 9, 1:30; Friday, Jan. 10,
10:30 and 1:30 (REQUIRED FOR ATTENDANCE
AT HANDS-ON SESSION) Yes _____ No _____
Hands-on sessions: 8:00 a.m. - 12:00 noon,
Monday Jan. 13, Tues. Jan. 14, Wed. Jan.
15, Thurs. Jan. 16 Yes _____ No _____

16. UMC Campus Context;
Program Evaluation Survey Follow-up
SURVEY IS REQUIRED FOR ATTENDEES OF
ANY PREVIOUS PROGRAMS EXCEPT #1)
Glenda Moum, Campus Computing
Thursday, January 16, 1:30;
Friday, January 17, 10:30 and 1:30 Yes _____ No _____

PLEASE RETURN THIS FORM TO MARSHA STEVENSON, 102 ELLIS, AS SOON AS POSSIBLE BEFORE WEDNESDAY, AUGUST 28. THANK YOU.

Name _____

Campus Address _____

Campus Telephone _____

APPENDIX B

UNIVERSITY OF MISSOURI-COLUMBIA LIBRARIES

MEMORANDUM

To: UMC Library Staff
From: Staff Development Committee
Date: September 5, 1985
Subject: Computer Literacy Program

Attached is a final version of the schedule of sessions to be offered in the Computer Literacy Program. This program is a project of the Staff Development Committee, and is being funded by a grant from the H. W. Wilson Company. The grant was awarded to the University of Missouri-Columbia specifically to help library staff members become more knowledgeable about computers.

The focus of each session is different, and a wide variety of topics is covered. Many of the programs relate to a specific library application, such as Circulation or Acquisitions; these lectures offer staff an opportunity to learn more about what goes on in all areas of the library. Later topics focus mostly on general microcomputer applications. Each of these programs will consist of an introductory lecture, followed by half-day hands-on practice sessions for people who wish to become proficient in word processing, spreadsheets, and database management systems.

We hope all staff will take advantage of the opportunity afforded by this grant to increase their computer expertise. Supervisors will make every effort to grant release time from work to allow people to attend sessions of their choice. Even if you did not return the survey indicating plans to come to some of the classes, you are still welcome to sit in on any of the lectures. Please try to make it to programs #2 and #16; but if you cannot attend these, we can make other arrangements for you to take the Program Evaluation Survey. Contact any member of the Staff Development Committee about this: Pat Burbridge, June DeWeese, Melissa Megas, Viki Young, and Marsha Stevenson, chair; or Drew Racine, chair of the Automation Committee. Thank you.

UNIVERSITY OF MISSOURI-COLUMBIA LIBRARIES
COMPUTER LITERACY PROGRAM

Introductory Sessions.

1. Sept. 6 10:30
   Sept. 6 1:30
   Introduction to the Program.
   Speakers: Marsha Stevenson, Head of Access Services, Ellis Library
   Thomas Shaughnessy, Director of Libraries, University of Missouri-Columbia

   "The Human Dimension of Library Automation"
   Speaker: Michael Gorman, Director of General Services, University of Illinois Libraries

2. Sept. 12 1:30
   Sept. 13 10:30
   Sept. 13 1:30
   Program Evaluation Survey.
   Completion of the survey is required for attendance at further sessions.
   The session at 1:30 Sept. 13 will end after administration of the survey.
   Survey developed by MaryEllen Sievert, Lecturer, University of Missouri School of Library and Informational Science

   Introduction to Computers.
   Speaker: Brian Waterman, Campus Computing, University of Missouri-Columbia

Library Automation.

3. Sept. 19 1:00
   Introduction to Library Automation.
   Speaker: Thomas Kochtanek, Associate Professor, University of Missouri-Columbia School of Library and Informational Science

4. Sept. 27 10:30
   Introduction to OCLC.
   Speaker: Mary Ann Mercante, Executive Director, Missouri Library Network Corporation

5. Oct. 11 10:30 Applications of OCLC.
Cataloging.
Speaker: Victor Myers, Head of Search Cataloging, Ellis Library
ILL Subsystem.
Speaker: Marilyn Voegele, Head of Interlibrary Loan, Ellis Library
Subject Searching of OCLC Via BRS.
Speaker: LITQUEST Coordinator, Ellis Library

6. Oct. 25 10:30 LUMIN.
Development; problems; future
Speaker: Nancy Boon, Acting Director, University of Missouri Library Systems Office

7. Oct. 31 RLIN.
8:30 General introductory session.
10-3 Advanced session.
3-4 Hands-on training (limited to six people)
Speaker: Gregory Whitfield, Senior Coordinator of Technical Services, CLASS

8. Nov. 8 10:30 Database Searching.
LITQUEST; After Dark; End User Searching
Opportunity for library-subsidized hands-on practice with LITQUEST after Dark
Speaker: LITQUEST Coordinator, Ellis Library

9. Nov. 15 10:30 Circulation.
CIRCEL to BLIS; Bar Coding
Speakers: Marsha Stevenson, Head of Access Services, Ellis Library
Helen Spalding, Associate Director of Libraries, University of Missouri-Kansas City

10. Nov. 22 10:30 Acquistions.
BATAB; Innovacq
Speaker: Carol Vaughan, Head of Acquisitions, Ellis Library

11. Dec. 6 10:30 Serials.

Speakers: Deana Astle, Head of Serials, Ellis Library
Jim Cubit, Assistant Director of Technical Services, University of Missouri-Rolla

Microcomputers.

12. Dec. 12 1:30 Introduction to the IBM PC.
Dec. 13 10:30
1:30

Required for attendance at sessions 13-15 if no previous PC experience.
Equipment, capabilities; hardware/software
Speaker: Rick Mihalevich, Campus Computing, University of Missouri-Columbia

13. Dec. 20 10:30 Data Base Management Systems.

Lecture is required for attendance at hands-on training sessions.
General introduction; available packages
Speaker: Rick Mihalevich, Campus Computing, University of Missouri-Columbia

Hands-on sessions on dBase III:
8:00 a.m. - 12:00 noon, Monday Dec. 23 and Monday Dec. 30

14. Jan. 6 10:30 Spreadsheets.
Jan. 6 1:30

Lecture is required for attendance at hands-on training sessions.
General introduction; available packages
Speaker: Rick Mihalevich, Campus Computing, University of Missouri-Columbia

Hands-on sessions on LOTUS 1-2-3:
8:00 a.m. - 12:00 noon, Tuesday Jan. 7, Wednesday Jan. 8, and Thursday Jan. 9

15. Jan. 9 1:30 Word Processing.
Jan. 10 10:30
Jan. 10 1:30

Lecture is required for attendance at hands-on training sessions.
Speaker: Glenda Moum, Campus Computing, University of Missouri-Columbia

Hands-on sessions on DisplayWrite 3:
8:00 a.m. - 12:00 noon, Monday Jan. 13, Tuesday Jan. 14, Wednesday Jan. 15, and Thursday Jan. 16

16.	Jan. 16	1:30	UMC Campus Context
	Jan. 17	10:30	Speaker: Glenda Moum, Campus Computing,
	Jan. 17	1:30	University of Missouri-Columbia

Program Evaluation Survey Follow-up
Required for attendees of any previous session except the initial lecture.
Developed by Mary Ellen Sievert, Lecturer, University of Missouri-Columbia School of Library and Informational Science

Wrapup.
Speakers: Marsha Stevenson, Head of Access Services, Ellis Library
Thomas Shaughnessy, Director of Libraries, University of Missouri-Columbia

APPENDIX C

UNIVERSITY OF MISSOURI-COLUMBIA

University Libraries

Administrative Offices
Columbia, Missouri 65201-5149
Telephone (314) 882-4701

May 1, 1986

Dear

The UMC Libraries are continually seeking ways to improve staff development programs. The best way in which this can be achieved is to know as much as possible about the needs and interests of the staff. To accomplish this goal, we would like to know:

1. Are we providing adequate and meaningful staff development programs on computer technology, computer literacy and library automation?

2. Did the Computer Literacy Program funded by the H.W. Wilson Co., provide enough information on the topics scheduled for each session?

3. Can future staff development program offerings be expanded and improved so that program activities are better suited to an individual's personal and job-related strengths?

To secure the answers to these questions, we need your cooperation. We are asking that library staff who were not able to attend at least four of the Computer Literacy Program sessions complete a set of questionnaires. The first questionnaire will be mailed to participants and can be completed in less that 10 minutes. The second questionnaire will be administered by two library science students, Ms. Nina Clayton and Ms. Paula Roper, from the UMC School of Library and Informational Science, and will take approximately 30 minutes to complete.

We wish to assure you that at no time will the identity of participants be disclosed. All information collected will be used as group data, thus ensuring the anonymity of the respondents.

Please return the consent form that is attached by Tuesday, May 6th in the enclosed envelope, and make a commitment to share information with us. In return, we will gladly share our results with you when the survey is completed. Once your consent form is returned, you will receive the first questionnaire and Ms. Clayton or Ms. Roper will be contacting you to schedule a time that is convenient for you to complete the second questionnaire. Your cooperation will be greatly appreciated.

Sincerely,

Rosie L. Albritton

Rosie L. Albritton
Assistant-to-the-Director
for Special Projects

An equal opportunity institution

APPENDIX D

UNIVERSITY OF MISSOURI-COLUMBIA

University Libraries

Administrative Offices
Columbia, Missouri 65201-5149
Telephone (314) 882-4701

May 8, 1986

Dear

The UMC Libraries are continually seeking ways to improve staff development programs. The best way in which this can be achieved is to know as much as possible about the needs and interests of the staff. To accomplish this goal, we would like to know:

1. Are we providing adequate and meaningful staff development programs on computer technology, computer literacy and library automation?

2. Did the Computer Literacy Program funded by the H.W. Wilson Co., provide enough information on the topics scheduled for each session?

3. Can future staff development program offerings be expanded and improved so that program activities are better sutied to an individual's personal and job-related strengths?

To secure the answers to these questions, we need your cooperation. We are asking that library staff who attended at least eight of the Computer Literacy Program sessions complete a questionnaire, as part of the CLR follow-up survey on the program. The questionnaire will be administered by two library science students, Ms. Nina Clayton and Ms. Paula Roper, from the UMC School of Library and Informational Science, and will take approximately 30 minutes to complete.

We wish to assure you that at no time will the identity of participants be disclosed. All information collected will be used as group data, thus ensuring the anonymity of the respondents.

Please return the consent form that is attached by Wednesday, May 14th, in the enclosed envelope, and make a commitment to share information with us. In return, we will gladly share our results with you when the survey is completed. Once your consent form is returned, Ms. Clayton or Ms. Roper will be contacting you to schedule a time that is convenient for you to complete the questionnaire. Your cooperation will be greatly appreciated.

Sincerely,

Rosie

Rosie L. Albritton
Assistant-to-the-Director
for Special Projects

an equal opportunity institution

APPENDIX E

UMC LIBRARIES

COMPUTER LITERACY PROGRAM
Follow-up Survey

Participant Consent Form

_____ YES, you may contact me to participate in the survey.

_____ NO, I will not participate in this survey.

Comments: (Optional)

_____

_____

_____

_____

_____

Name: _____ Date: _____

Telephone: _____

Please return to:

Rosie L. Albritton
Ellis Library 104

APPENDIX F

COMPUTER OPINION SURVEY
(VERSION AZ)

by
Matt Maurer, M.S.
Michael R. Simonson, Ph.D.
College of Education
Iowa State University
Ames, Iowa

Directions: Fill out the following data completely

Name: Last, First and Middle initial

Sex: Male or Female

Grade: Last year of school completed

Birth Date: Month, Day, Year

Have you ever taken a course in computer literacy and/or computer programming?
Yes No

What is your job title at this library?

Library Clerk I

Library Clerk II

Library Clerk III

Library Assitant I

Library Assistant II

Librarian I

Librarian I

Librarian II

Librarian III

Librarian IV

Other

Instructions: Please indicate how you feel about the following statements. Use the scale below to indicate your feelings. Circle the appropriate number.

1 = Strongly agree
2 = Agree
3 = Slightly agree
4 = Slightly disagree
5 = Disagree
6 = Strongly disagree

1. Having a computer available to me would improve my productivity.
1 2 3 4 5 6

2. If I had to use a computer for some reason, it would probably save me some time and work.
1 2 3 4 5 6

3. If I use a computer, I could get a better picture of facts and figures.
1 2 3 4 5 6

4. Having a computer available would improve my general satisfaction.
1 2 3 4 5 6

5. Having to use a computer could make my life less enjoyable.
1 2 3 4 5 6

6. Having a computer available to me could make things easier for me.
1 2 3 4 5 6

7. I feel very negative about computers in general.
1 2 3 4 5 6

8. Having a computer available to me could make things more fun for me.
1 2 3 4 5 6

9. If I had a computer at my disposal, I would try to get rid of it.
1 2 3 4 5 6

10. I look forward to the time when computers are more widely used.
1 2 3 4 5 6

11. I doubt if I would ever use computers very much.
1 2 3 4 5 6

12. I avoid using computers whenever I can.
1 2 3 4 5 6

13. I enjoy using computers.
1 2 3 4 5 6

14. I feel that there are too many computers around now.
1 2 3 4 5 6

15. Computers are probably going to be an important part of my life.
1 2 3 4 5 6

16. A computer could make learning fun.
1 2 3 4 5 6

17. If I were to use a computer, I could get a lot of satisfaction from it.
1 2 3 4 5 6

18. If I had to use a computer, it would probably be more trouble than it was worth.
1 2 3 4 5 6

19. I am usually uncomfortable when I have to use computers.
1 2 3 4 5 6

20. I sometimes get nervous just thinking about computers.
1 2 3 4 5 6

21. I will probably never learn to use a computer.
1 2 3 4 5 6

22. Computers are too complicated to be of much use to me.
1 2 3 4 5 6

23. If I had to use a computer all the time, I would probably be very unhappy.
1 2 3 4 5 6

24. I sometimes feel intimidated when I have to use a computer.
1 2 3 4 5 6

25. I sometimes that computers are smarter than I am.
1 2 3 4 5 6

26. I can think of many ways that I could use a computer.
1 2 3 4 5 6

APPENDIX G

INTERVIEW SCHEDULE

1. How long have you worked at the UMC libraries?

2. Have you ever worked in other libraries?

3. Have you ever had hands-on experience with computers?
yes no

4. Are you presently working with computer technology on your job?
yes no

5. I am going to list several terms/systems/processes. Will you tell me for each one if you are aware of what it is and if so if you have ever used it.

Term	Aware	Used
OCLC monograph system		
OCLC interlibrary loan		
data base searching		
word processing		
spreadsheets		
database management systems		
RLIN		
IBM-PC		
BATAB		
automated circulation system		
mainframe (4381, AMHDAL)		
LUMIN		
INFOTRAC		

6. Do you own a computer or have access to one other than at work?
Yes no

7. Have you personally searched on LUMIN?
yes no

8. If yes, how often? frequently occasionally

Have you been pleased with your experiences with LUMIN?
yes no

9. Were you working in Ellis Library before OCLC was introduced?
yes no (go to 10)

10. If yes, do you think the introduction of OCLC was a positive or a negative experience?
positive negative

Now I'm going to ask some questions about the computer literacy program which was recently completed.

11.. Was the scheduling of the sessions of the computer literacy program convenient for you?
yes no

12. Was the location of the sessions of the computer literacy program convenient for you?
yes no

13. How might the scheduling or the location have been improved to fit your schedule?

14. If you attended any sessions, how did you choose which session to attend?

15. Did many of the people in your department attend several sessions?
yes no

16. If more than one person in your department wanted to attend the sessions, did you department set up a procedure for determining who attended?

yes no

If yes, what was the process?

17. Were there sessions of the computer literacy program that you would like to have attended but did not get to?

yes no

which ones?

Human dimensions of lib. auto.	Intro. to computers
Intro. to lib. auto.	Intro. to OCLC
Applications of OCLC	LUMIN
RLIN	Database searching
Circulation/bar coding	Asquisitions
Serials	Intro. to the IBM-PC
Database Mngmnt Syetems	Spreadsheets
Word processing	Campus context

18. If so, why didn't you attend these sessions?

19. Did you feel that you could attend the sessions of the computer literacy session and still complete your tasks each week?

yes no

20. How confident were you that you would understand the speakers at the computer literacy workshops?

very confident	somewhat confident	confident	not very confident	thought I would not

21. How likely did you think it was that the topics of the computer literacy workshops would be of value in your current job?

very likely | somewhat likely | likely | somewhat unlikely | very unlikely

Now I'm going to ask some general questions about computers and your job.

22. How confident do you feel that a computer would be able to do your job as accurately or effectively as you do?

very confident | somewhat confident | confident | not very confident | it couldn't

23. How likely do you think it is that computer technology could improve your job efficiency?

very likely | somewhat likely | likely | somewhat unlikely | absolutely unlikely

24. If you were to get to use a computer in your job, how likely do you think it is that your job will provide an opportunity for more supervision?

very likely | somewhat likely | likely | somewhat unlikely | very unlikely

25. If you were to get to use a computer in your job, how likely do you think it will provide an increase in your job responsibility?

very likely | somewhat likely | likely | somewhat likely | very unlikely

26. If you were to get to use a computer in your job, how likely do you think it is that it will provide a decrease in your job responsibility?

very likely | somewhat likely | likely | somewhat unlikely | very unlikely

27. How likely do you think it is that learning about computers could help you to get a promotion in the library?

very likely | somewhat likely | likelly | somewhat unlikely | very unlikely

28. How likely do you think it is that learning about computers could help you to get a job outside this library system?

very likely | somewhat likely | likely | somewhat unlikely | very unlikely

29. How do you feel about the following statement? Computer literacy is necessary. It will be a survival skill in the future.

strongly agree | agree | don't know | disagree | strongly disagree

30. How do you feel about the following statement? I feel that the library should not be buying microcomputers when we are faced with such staff shortages.

strongly agree | agree | don't know | disagree | strongly disagree

31. How do you feel about the following statement? I am interested in computers but I don't have the time to learn about them.

strongly agree | agree | don't know | disagree | strongly disagree

32. How do you feel about the following statement? I already know enough about computers and do not need to learn more.

strongly agree | agree | don't know | disagree | strongly disagree

33. Have you read or heard about computers in any of the following sources within the past three months?

newspapers

magazines

books

television

radio

Now I'm going to ask you to complete three sentences.

34. The role of computer technology in the library is. . .

35. I would/would not like to attend future computer literacy workshops because. . .

36. If I were to design future in-service workshops for the staff of Ellis library, I would . . .

For professional librarians only

a. When did you receive your library degree?

b. Have you attended other in-service training offered by Ellis library?

c. Have you attended other continuing education workshops offered by sources other than Ellis library?